AMENDMENT TO THE CLAIMS

1. (currently amended) A method of determining branch metric values in a detector, the method comprising:

(a) ~~developing~~programming the detector with a statistical model having a transition jitter variable that represents, for each data symbol, a non-integer shift in discrete time with respect to a symbol rate clock and that relates transition jitter~~, which depends upon positions of data transitions on a medium,~~ to signal sample noise in an amplitude domain;

(b) receiving time variant signal samples; and

(c) computing, by control circuitry, the branch metric values as a function of transition jitter statistics corresponding to the signal samples based on the statistical model.

2. (original) The method of claim 1 wherein the transition jitter statistics comprise transition jitter variance.

3. (previously presented) The method of claim 1 wherein the computing step (c) further comprises computing the branch metric values as a function of wide-band additive noise corresponding to the signal samples.

4. (previously presented) The method of claim 1 wherein the computing step (c) further comprises computing the branch metric values as a function of hypothesized data sequences corresponding to trellis branches of the detector.

5. (previously presented) The method of claim 1 wherein the computing step (c) further comprises computing the branch metric values as a function of an equalized transition response derivative of the signal samples.

6. (original) The method of claim 1 wherein a derivation of transition jitter statistics is carried out from a Bayesian viewpoint, wherein transition jitter is treated as a random, nonlinear, nuisance parameter.

7. (original) The method of claim 1 wherein the detector is a hard decision detector.

8. (original) The method of claim 1 wherein the detector is a soft decision detector.

9. (cancelled)

10. (original) The method of claim 1 wherein the detector is a post processor, which refines signals output by a primary detector.

11. (currently amended) A detector comprising:

control circuitry;

a statistical model having a transition jitter variable that represents, for each data symbol, a non-integer shift in discrete time with respect to a symbol rate clock and that relates transition jitter~~, which depends upon positions of data transitions on a medium,~~ to signal sample noise in an amplitude domain;

branch metric calculation modules configured to determine branch metric values by:

(a) receiving time variant signal samples; and

(b) computing, by the control circuitry, the branch metric values as a function of transition jitter statistics corresponding to the signal samples based on the statistical model.

12. (original) The apparatus of claim 11 wherein the transition jitter statistics comprise transition jitter variance.

13. (original) The apparatus of claim 11 wherein the branch metric calculation modules are further configured to carry out the computing step (b) by computing the branch metric values as a function of wide-band additive noise corresponding to the signal samples.

14. (original) The apparatus of claim 11 wherein the branch metric calculation modules are further configured to carry out the computing step (b) by computing the branch metric values as a function of hypothesized data sequences corresponding to trellis branches of the detector.

15. (original) The apparatus of claim 11 wherein the branch metric calculation modules are further configured to carry out the computing step (b) by computing the branch metric values as a function of an equalized transition response derivative of the signal samples.

16. (original) The apparatus of claim 11 wherein a derivation of transition jitter statistics is carried out from a Bayesian viewpoint, wherein transition jitter is treated as a random, nonlinear, nuisance parameter.

17. (original) The apparatus of claim 11 wherein the detector is a hard decision detector.

18. (original) The apparatus of claim 11 wherein the detector is a soft decision detector.

19. (cancelled)

20. (currently amended) A detector comprising:

control circuitry;

a statistical model having a transition jitter variable that represents, for each data symbol, a non-integer shift in discrete time with respect to a symbol rate clock and that relates transition jitter~~, which depends upon positions of data transitions on a medium,~~ to signal sample noise in an amplitude domain; and

means, utilizing the control circuitry, for computing branch metric values as a function of transition jitter statistics corresponding to signal samples received by the detector based on the statistical model.

21. (previously presented) The method of claim 1 wherein the statistical model is a Taylor series model.

22. (previously presented) The detector of claim 11 wherein the statistical model is a Taylor series model.